6.14 WASTE MANAGEMENT

Procedures and facilities at the Morro Bay Power Plant (MBPP) for the management of nonhazardous and hazardous wastes are described in this section. Changes in the types and amounts of operational waste streams will qualify as less than significant (see Section 6.14.2 for significance thresholds) because of the following beneficial aspects of the Project related to waste management:

- The amount of waste generated at MBPP will decrease approximately 83 percent because the new combined cycle gas turbine units will not require the cleaning effort of existing boiler Units 1 through 4.
- The types of wastes that will be generated during future operations are similar to those currently being generated, including nonhazardous office waste, spent solvents, waste paint, oily water, boiler cleaning wastewater, and batteries.
- Existing practices, procedures and facilities for recycling, handling and disposal of nonhazardous and hazardous wastes have proven to be effective, and hence, will be continued.
- The current waste minimization program (i.e., in compliance with Senate Bill [SB]-14 regulations) will be maintained.
- Existing facilities, plans and management procedures are adequate to manage initial materials and handle the anticipated types and magnitudes of wastes.
- The trained, proven professional/technical staff at MBPP will continue to assure effective management of the waste streams generated at MBPP.
- Inert (i.e., concrete/asphalt/soil) waste produced by demolition of the current power building and stacks will be used to fill in the basement areas left following removal of the power plant building and grade slab.

Existing programs at MBPP already address nonhazardous and hazardous waste storage locations, emergency response procedures, employee training requirements, hazard recognition, fire control procedures, hazard communications training, personal protection equipment training, and release reporting requirements. These programs assure plant employees and the public that nonhazardous and hazardous waste are managed carefully, and that there are no significant impacts associated with these wastes. An environmental site assessment (ESA), coordinated with appropriate regulatory agencies, determined that no remediation of soil and ground water is required to protect human health or the environment during operation of the MBPP.

The discussion of waste management begins with existing conditions, including a description of the Phase I and II ESAs and the wastes associated with current operation of Units 1 through 4 (Section 6.14.1). Before the sale of the MBPP to Duke Energy, Pacific Gas and Electric Company (PG&E) conducted Phase I and Phase II ESAs to identify isolated areas of soil and ground water that had become contaminated after almost five decades of service generating electric power.

Section 6.14.2 discusses the less-than-significant impacts associated with the waste management aspects of onsite tank demolition, construction of the Project, demolition of the existing power building and stacks, and operation of the new generating units. Hence, the Project requires no mitigation as discussed in Section 6.14.3, and causes no significant unavoidable adverse impacts (Section 6.14.4). Compliance with applicable laws, ordinances, regulations and standards (LORS) is discussed in Section 6.14.5.

6.14.1 EXISTING CONDITIONS

The MBPP is located in the City of Morro Bay, 12 miles northwest of San Luis Obispo, California, in San Luis Obispo County. The plant is situated west of Highway 1, near Morro Bay Harbor and east of Estero Bay. The area includes light industry, commercial operations, and marine, recreational and residential uses.

6.14.1.1 Overview of Phase I and II ESAs

The Phase I and Phase II ESAs provided information on existing and potential contamination of soil and ground water that occurred during PG&E ownership and operation of the MBPP, and might require remediation (by PG&E). These ESAs are summarized in Sections 6.14.1.1.1 and 6.14.1.1.2.

6.14.1.1.1 Phase I ESA

The Phase I ESA identified the presence or likely presence of hazardous substances or petroleum products in the onsite soil, ground water or surface water relating to an existing or historic release (Camp Dresser & McKee, 1997). The assessment was conducted in general accordance with American Society for Testing and Materials (ASTM) standard designation E1527-94, Standard Practice for ESA: Phase I ESA Process, and is incorporated herein by reference in its entirety. The ESA results are summarized in Table 6.14-1.

As noted in the table, the locations have either been remediated in consultation with appropriate regulatory agencies, or were determined by the regulatory agencies not to be substantial enough to require further action.

TABLE 6.14-1

SUMMARY OF FINDINGS
PHASE I ENVIRONMENTAL SITE ASSESSMENT(1)
MORRO BAY POWER PLANT

LOCATION	CONTAMINANTS	AMOUNT OR CONCENTRATION	NOTES	CLEANUP COMPLETED BY TIME OF PROJECT
Soils Surrounding or Beneath Fuel Oil Tanks 1 through 5	Rust-inhibiting oil, fuel oil, paint chips	715 gallons of rust-inhibiting oil injected into 5 feet of soil surrounding tanks in 1974.	Possible contamination of soil under tanks will be cleaned up by PG&E.	Yes
Soils Near Tank 1 and Former Oil Transfer Pond Near Tank 1	Total petroleum hydrocarbons (TPH)	Ground water monitoring showed TPH and volatile and semivolatile organic concentrations below detection limits.	In-situ bioremediation of soil completed.	Yes
	Volatile and semivolatile organics		November 4, 1996 report to DTSC showed that no further action was required at the oil transfer pond. DTSC granted "clean closure" on January 6, 1998.	Yes
In Equipment and Pipe Insulation on Onsite Fuel Tank Farm	Asbestos-containing materials	N/A	Included as part of the fuel tank demolition project.	Yes
Ball Launcher Facility in the Pipeline of the Onsite Fuel Tank Farm	No. 6 fuel and displacement oils	Unknown	One-time historic release of a less-than- reportable quantity on concrete containment area (i.e., no soil contamination). Cleaned up from concrete according to SPCC Plan.	Yes
Upper Impounding Basin Area	Displacement oil	Unknown	Contaminated soil was transported offsite for disposal.	Yes
Rock Blotter Area Around Transformer Banks 1 Through 4 North of the Power Building	TPH and lead	TPH ≤34,000 mg/kg in soils left in place	Most of the contaminated soil was removed; remaining soil was sealed with cement slurry. Ground water sample taken then was not impacted.	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.

98-710/Rpts/AFC(Text)/Tbls/Sect6 (9/13/00/rw)

(1) Camp Dresser & McKee (1997).

6.14.1.1.2 Phase II ESA

A Phase II ESA for MBPP was conducted for PG&E as part of the process associated with the sale of the power plant (Fluor Daniel GTI, 1997), and is incorporated herein by reference in its entirety. Subsurface testing of soil, ground water and sediment was performed to further investigate issues identified in the Phase I ESA and to fully characterize the site. The evaluation showed that remediation was not required to protect human health and the environment, but in certain areas would likely be required to comply with environmental regulations. The Phase II ESA identified areas where soils contained more than 150 milligrams per kilogram (mg/kg) of total petroleum hydrocarbons (TPH) and ground water contained more than 100 micrograms per liter (µg/L) of TPH.

The areas of the site that require remediation are shown in Figure 6.14-1. These areas account for only about 1.35 acres of the 107-acre site, or about 1 percent of the total area. A corresponding list of issues and locations is shown in Table 6.14-2. Remedial Issue I applies to petroleum hydrocarbons in soil and ground water in 9 areas around the facility. As will be seen in Section 6.14.2, these Remedial Issue areas would not be located where project facilities are planned.

As part of the agreement for MBPP, PG&E will be responsible for the remaining cleanup of the remediation areas listed in Table 6.14-2 and Figure 6.14-1. For example, when the onsite fuel tanks are demolished as a part of the Project, PG&E will collect additional Phase II data in previously inaccessible areas such as beneath the aboveground oil storage tanks, and will implement any needed remediation.

6.14.1.2 Facility Waste Streams

Operation of a power plant requires use of nonhazardous materials such as paper, cardboard, wood, aluminum, and food. Potentially hazardous materials are also used, including solvents, ethylene glycol (antifreeze), batteries, and petroleum lubricants (see Section 6.15 for a discussion of hazardous materials handling). Use of these materials during power plant operations results in the generation of both nonhazardous and hazardous wastes. Table 6.14-3 provides an overview of the primary waste streams generated during facility operations, including a description of each waste, its origin and composition, estimated amount, frequency of generation, and waste management method.

In compliance with applicable LORS, these wastes have been, and will continue to be, handled as part of normal ongoing waste management at MBPP, including offsite transport and disposal. Hence, the environmental impacts of these wastes have been, and will continue to be, less than significant.

98-710RAFC-104 REV. 10/13/00

PG&E PROPERTY

PG&E PROPERTY

CALIF STATE HIGHWAY NO.1

BASEBALL FIELD

BASEBALL FIELD

PARKING

MORRO CREEK

RV STORAGE

RV PARK

VEGETATION

VEGETATION

VEGETATION

PG&E PROPERTY

REMEDIAL ISSUE Ih
(0.034 ac)

REMEDIAL ISSUE Ii
(0.022 ac)

REMEDIAL ISSUE Ie
(0.31 ac)

REMEDIAL ISSUE Ig
(0.22 ac)

REMEDIAL ISSUE If
(0.021 ac)

REMEDIAL ISSUE Id
(0.069 ac)

REMEDIAL ISSUE Ic
(0.053 ac)

REMEDIAL ISSUE Ia
(0.11 ac)

REMEDIAL ISSUE Ib
(0.017 ac)

DUNES

DUNES

DEN DULK PROPERTY
(POTENTIAL OPTION TO PURCHASE)

MORRO BAY

POWER BUILDING

SWITCHYARD

MAIN PARKING LOT

EMBARCADERO ROAD

T PIER

LEGEND

- FENCE
- DUKE ENERGY MORRO BAY LLC PROPERTY LINE
- PG&E PROPERTY LINE
- REMEDIAL ISSUE - GROUND WATER
- REMEDIAL ISSUE - SOIL

NOTE: SEE TABLE 6.14-1 FOR LISTING OF REMEDIAL AREAS. REMEDIAL ISSUES DESCRIBED IN PHASE II ESA.

TRUE NORTH
PLANT NORTH

0 200 300 600 FEET
SCALE

SOURCE : BASE FROM FLUOR DANIEL GTI PHASE II ENVIRONMENTAL SITE ASSESSMENT PLATE 1-1A DATED 6/16/97.

PHASE II REMEDIAL AREAS

DUKE ENERGY MORRO BAY LLC
MORRO BAY POWER PLANT

TRC

FIGURE 6.14-1

TABLE 6.14-2

REMAINING REMEDIAL AREAS[1]
MORRO BAY POWER PLANT

ISSUE AND NUMBER	LOCATION[2]	STATUS OF CLEANUP
Ia	Fuel Oil Beach Valve and Receiving Area - Ground Water	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ib	Fuel Oil Beach Valve and Receiving Area - Soil	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ic	Beach Valve Area - Ground Water	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Id	Fire House No. 1 - Soil	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ie	Switchyard - Ground Water	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
If	Downgradient of Transformer Unit No. 1	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ig	South of Switchyard - Soil	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ih	Northeast of Switchyard	PG&E retains remediation responsibility per terms and conditions in the Purchase and Sale Agreement.
Ii	Former Construction Storage Area - Soil	PG&E remediated before Purchase and Sale Agreement (July 1, 1998).

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(1) These areas have petroleum hydrocarbons in soil and ground water, according to Phase II ESA. These remedial issues will be managed by PG&E, and hence, this AFC does not specify the amounts of waste that will be generated by actions outside the Project.

(2) Locations shown in Figure 6.14-1.

TABLE 6.14-3

SUMMARY INVENTORY OF EXISTING OPERATING WASTE STREAMS MORRO BAY POWER PLANT

TYPE	PHASE	EXAMPLES	DESCRIPTION/ COMPOSITION	ANNUAL (1998) QUANTITY GENERATED[1]	FREQUENCY OF GENERATION	WASTE MANAGEMENT METHODOLOGY	
						Onsite	Offsite
Hazardous	Solids	• RCRA hazardous waste solids • Non-RCRA hazardous waste solids	Pond sludge, metals-containing debris, boiler bottom ash, mercury-containing equipment, waste paint, containers, batteries, petroleum wastes, sandblast waste, asbestos-containing material (ACM)	36 tons[2]	Variable	Storage < 90 days; waste minimization practices per SB-14	Class I Landfill Disposal Class II Landfill Disposal for selected materials (e.g., ACM)
	Liquids	• RCRA hazardous waste liquids • Non-RCRA hazardous waste liquids	Spent solvents, waste paint, waste ethylene glycol, oily water; waste oil, boiler fireside wash, and some chemical cleaning rinses	47,731 gallons	Variable	Storage < 90 days except for liquid wastes in ponds. EDTA chemical cleaning waste is captured for recycling, and treated as an excluded recyclable material	Recycling (oily water); no offsite disposal of metals-containing water; Surface impoundment sludge collected annually and sent to Class I Landfill.
Nonhazardous	Solids	• Office waste • Other municipal trash	Paper products, trash, minor construction debris, household-type waste	156 tons	Daily/ Continuous	Containerization/ Housekeeping	Class III/II Landfill Disposal
	Liquids	• Continuous flow cooling water • Wastewaters discharged from ponds under NPDES permit	Primarily once through cooling water; also includes wash and makeup waters, boiler blowdown, sump and floor drain discharges and waters from surface impoundments and oily water separator system	1.28×10^{11} gallons;[3] [3.88×10^{11} gallons are permitted under WDR Order No. 95-28, NPDES Permit No. CA0003743]	Daily/ Batch Processes	Evaporation	Discharged Under NPDES Permit

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(1) The quantity varies from year to year.
(2) The quantity was based on Hazardous Waste Reports.
(3) Nonhazardous liquids are generated in both continuous and batch processes. Discharges of these waters typically vary on a daily and monthly basis; the indicated volume is based on averages reported to the RWQCB in the annual Discharge Self Monitoring Report. As indicated, these discharges are well below quantities allowed under permit.

Onsite waste streams include the following hazardous and nonhazardous wastes:

- Hazardous Solids
  - Sludges are generated by activities such as boiler fireside washing and boiler chemical cleaning. These sludges have been previously characterized as hazardous, and hence, are disposed of offsite at a Class I disposal facility.

    Other activities that include use of the surface impoundments, such as collecting rainwater from sumps and washing down equipment, while not hazardous, may result in formation of hazardous sludge due to evaporation from the ponds. Waste sludge removed annually from the surface impoundments is always sampled and analyzed. Proper waste profiling and disposal is then determined from the analytical results.
  - Petroleum-contaminated wastes, debris, containers, batteries, sandblast sands, and boiler bottom ash are generated in batch mode and stored in designated hazardous waste accumulation areas prior to disposal at an appropriate offsite disposal facility.
- Hazardous Liquids
  - Spent solvents, waste paints, waste ethylene glycol and other hazardous liquids are generated in batch mode and stored in designated hazardous waste accumulation areas prior to offsite disposal.
  - Reclaimed oil is generated by treatment of oily wastewaters routed to the oily water separator. The reclaimed oil is recycled offsite by a licensed recycler.
- Nonhazardous Solids
  - Municipal trash derived from office and maintenance activities is generated continuously.
  - Minor construction debris from routine construction and maintenance activities is generated periodically.
- Nonhazardous Liquids
  - The clarified top layer of liquid (supernatant) from ponds, after treatment, is discharged under the MBPP National Pollutant Discharge Elimination System (NPDES) Permit No. CA0003743. Common nonhazardous influents to these ponds include boiler blowdown water and demineralizer rinse water.

Hazardous solids generated by MBPP operations are stored in designated hazardous waste accumulation areas at the plant. These wastes are stored for less than 90 days prior to offsite disposal, in accordance with applicable hazardous waste management regulations.

The following measures are routinely employed to minimize the amount of hazardous wastes generated at MBPP:

- Recycling (e.g., oily water, waste solvents, and waste oil)
- Operational improvements
- Changes in production processes and inputs
- Administrative controls (e.g., inventory control, in-house employee incentive programs and training, corporate/management commitment)

These measures comply with applicable regulatory requirements (e.g., SB-14 [1989]) and are incorporated in the Source Reduction Evaluation Review and Plan for MBPP.

The effectiveness of source reduction approaches employed for each waste stream is routinely evaluated to refine and improve the overall source reduction program. Evaluation includes an assessment of reduction estimates, potential barriers/impacts, and recommendations to improve reduction performance.

6.14.1.2.1 Nonhazardous Waste Generation

Solid Waste

Operation and maintenance of MBPP produces various types of nonhazardous solid waste typical of power generation operations. Equipment operation and maintenance results in broken, defective and degraded parts, empty containers, wood pallets, packaging and other spent materials. Administrative activities and site personnel generate paper, cardboard, food waste and other discards. Some wastes, such as paper, aluminum cans and plastic containers are suitable for recycling. Large roll-off containers are provided for the collection and recycling of scrap metal (typically steel and aluminum).

Table 6.14-4 provides pertinent information for three Class III waste disposal sites in the vicinity of the power plant, each of which is capable of accepting the amount of nonhazardous solid waste generated by the MBPP.

Municipal solid waste generated at MBPP is routinely segregated according to recyclable (e.g., glass, aluminum) and nonrecyclable fractions to minimize the quantity of waste disposed offsite (i.e., in landfills). Efforts to further minimize the quantity of nonrecyclable waste generated at the plant are also routinely conducted by MBPP staff.

TABLE 6.14-4

SUMMARY INFORMATION
CLASS III WASTE DISPOSAL SITES
IN VICINITY OF MORRO BAY POWER PLANT

CHARACTERISTICS	COLD CANYON LANDFILL(1)	CHICAGO GRADE LANDFILL	CITY OF PASO ROBLES LANDFILL
Location	Hwy 227, 5 miles south of San Luis Obispo Airport	2290 Homestead Road, Templeton	State Hwy 46, 8 miles east of Paso Robles
Current Annual Disposal Rate (tons per year)	140,000	46,430	69,000
Permitted Daily Disposal Rate (tons per day)	750	500	250
Actual Daily Disposal Rate (tons per day)	400	100	90
Remaining Capacity (million cubic yards)	3.3	1.5	2.9
Anticipated Year of Closure	2012 to 2020(2)	2020	2034
Approximate Distance From Site (miles)	20	25	35
Subject to Agency Enforcement Actions	No	No	No

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(1) Currently receives municipal solid waste from MBPP.
(2) Anticipated date of closure varies, as landfill use depends on a number of variables, including population growth, waste-to-soil ratio, compaction, recycling, economic conditions, weather.

Wastewater

Nonhazardous wastewater is generated by power plant operation and maintenance. This wastewater includes cooling water, intake screen wash, evaporator blowdown, boiler blowdown, bearing cooling water, floor drain water and other liquids. MBPP has a NPDES permit that is based on a comprehensive analysis of the composition of the nonhazardous wastewater streams. The NPDES permit sets limits on the discharge that is allowed into the ocean without causing a significant impact. The analysis and permit conditions also determine which wastewater streams require treatment prior to discharge, including neutralization to achieve allowable pH limits.

The onsite wastewater collection system operates in compliance with applicable regulations and the plant's NPDES permit. Before being discharged to the cooling water outfall, process wastewater, such as washdown water, water from the basement sumps, and stormwater run-off, with the potential to contain oil, are routed through an oil/water separator. The separator discharge averages approximately 5,000 gallons per day (gpd) of plant wash water and precipitation run-off, as well as stormwater from roof drains and storm drains in areas around the boiler draft fans. Stormwater from parking lots, roads, and other "non-industrial" areas flows directly to Morro Bay. A Stormwater Pollution Prevention Program is incorporated into the NPDES permit.

An average of approximately 504 million gpd of process wastewater, mostly cooling water with some screen wash water, was discharged through the existing structure during the 12 months ending with June 2000. This time period is used because the flow was the highest in recent years. This amount is approximately 70 percent of the 725 million gpd permit limit. As a portion of this total, the power plant generates a yearly average of approximately 100,000 gpd of boiler blowdown and plant washdown water collected in sumps, and blowdown from the evaporative cooler. A portion of the blowdown water, approximately 20,000 gpd, is treated and reused as makeup water.

The site is serviced by a sanitary lift station for domestic sewage waste that is sent to the local sewer system.

6.14.1.2.2 Hazardous Waste Generation

Operation and maintenance of MBPP generates wastes that meet the California Code of Regulations (CCR) Title 22 criteria for hazardous waste. These include waste oil, boiler bottom ash, waste sandblasting sand, spent solvents, waste paint materials, batteries and fluorescent light tubes. A summary of these wastes is provided in Table 6.14-3.

MBPP generates approximately 200 gallons per year of used oil from vehicles and machinery lubricants. Used oil and waste solvents are recycled. Drummed used oil and oil from the oil/water separator are collected by a licensed oil recycler. Used oil filters are accumulated on site until collected by a licensed recycler. Oily rags are collected for reuse or disposal by a hazardous waste contractor.

Hazardous materials that are stored and utilized at MBPP in accordance with applicable LORS are discussed in Section 6.15.

MBPP has the following plans related to management of hazardous wastes:

- Business Plan/Contingency Plan (TRC, 1998a).
- Spill Prevention Control and Countermeasure Plan (TRC, 1998b).
- Storm Water Pollution Prevention Plan (Environmental Science & Engineering, 1996).
- Best Management Practices Plan (Duke Energy, 1999).

Each of these management plans includes detailed measures to prevent and respond to discharges, spills, leaks or other incidents involving hazardous materials. These measures include training of employees who handle hazardous materials, hazardous and nonhazardous wastes, and processes that generate these wastes. Other measures are the passive containment designs and structures that capture accidental spills before they can enter the environment, and periodic inspections.

6.14.1.3 Waste Disposal

6.14.1.3.1 Nonhazardous Waste Recycling and Disposal

There are three Class III municipal solid waste landfills in the vicinity of MBPP. These are shown in Table 6.14-4.

At present, nonhazardous wastes generated at MBPP that are not recycled are collected by Coastal Roll-Off Service and transported to the Cold Canyon Landfill in San Luis Obispo County for disposal. A daily average generation rate of 0.25 tons per day (tpd) of nonhazardous solid waste is transported monthly from the power plant by Coastal Roll-Off Service to the Cold Canyon Landfill. Another 0.2 tpd of nonhazardous solid waste is transported weekly by Morro Bay Garbage to the Cold Canyon Landfill. These rates are small compared to the 400-450 tpd disposed at Cold Canyon Landfill, and the 34 tpd disposed there by the City of Morro Bay (during 1999).

6.14.1.3.2 Hazardous Waste Recycling and Disposal

Hazardous wastes are stored in specific areas for limited periods of time (i.e., 90 days). This requirement means that multiple hazardous waste disposal sites must be identified which accept the specific hazardous waste streams. Regulations require that the hazardous waste generator (e.g., MBPP) evaluate each potential hazardous waste disposal site for its capacity and adherence to regulations controlling such disposal (i.e., protection of ground water).

There are three major Class I hazardous waste landfills in California. Safety Kleen (Buttonwillow) in Kern County has a permitted capacity of 13 million cubic yards. It has approximately 90 percent of its capacity (11 million cubic yards) remaining. It is estimated that it can receive waste for the next 30 to 40 years, or until after 2030. The United States Environmental Protection Agency (EPA) identification number for this facility is CAD980675276 (Nielsen, 1999).

Chemical Waste Management, Inc.'s Kettleman Hills Facility in Kings County has a permitted capacity of 10.7-million cubic yards, with about 73 percent (7.9-million cubic yards) remaining. It is estimated that Kettleman Hills will be able to receive hazardous waste for the next 25 years, or until approximately 2025. The EPA identification number for this facility is CAT000646117 (Azzam, 1999).

Safety Kleen (Westmorland) in Imperial County has a permitted disposal capacity of 5-million cubic yards. It has about 74 percent capacity (3.7-million cubic yards) remaining. At present rates of disposal, it is estimated that it can receive waste for the next 50 years, or until approximately 2050. The EPA identification number for this facility is CAD000633164 (Sonneborn, 1999).

Asbestos-containing material and oily debris may also be disposed at the Class II Forward Landfill located near Manteca, California (San Joaquin County). This landfill has remaining capacity of 17-million cubic yards, which will last until approximately Year 2050.

Soil treatment and recycling facilities operate throughout California to handle petroleum hydrocarbon-contaminated soils and accept soils classified by the generator as nonhazardous waste (CCR Title 22 §66261). Soil treatment and recycling providers in central California include:

- Griffin Soil Stabilization, Hollister, California (soil stabilization and asphalt reclaiming)
- PW Environmental, Santa Paula, California (soils and ground water assessment and remediation)
- Resource Renewal Technology, Maricopa and Bakersfield, California (asphalt recycling and production)

Several waste oil haulers and recyclers are available to serve locations in San Luis Obispo County:

- Allwaste - Philip Services, San Ardo, California
- Evergreen - Santa Maria, California (tank farm); Newport Beach, California (corporate office)
- PW Environmental - Santa Paula, California

The following hazardous waste transporters were used to transport hazardous waste from MBPP in 1998:

- Allwaste Transportation & Remediation, Inc. EPA No. CAD063547996
- Allwaste Transportation & Remediation, Inc. EPA No. CAD980584510
- Evergreen Environmental Services EPA No. CAD980695761
- Safety-Kleen Corp. EPA No. ILD984908202

The following treatment, storage or disposal facilities were utilized for hazardous waste generated by MBPP operations in 1998:

- California Asbestos Monofill EPA No. CAL000027741
  Copperopolis, California (no longer in operation)
- Chemical Waste Management, Inc. EPA No. CAT000646117
  Kettleman City, California 93239
- ENSCO West, Inc. EPA No. CAD044429835
  Wilmington, California 90744
- Evergreen Environmental Services EPA No. CAD982446858
  Santa Maria, California 93454
- Mercury Recovery Services EPA No. CAL000043715
  Monrovia, California 91016
- Romic Environmental Technologies, Corp. EPA No. CAD009452657
  East Palo Alto, California 94303
- Safety-Kleen Corp. EPA No. CAD093459485
  Reedley, California 93654
- Safety-Kleen Corp. EPA No. CAT000613893
  El Monte, California 91731

6.14.1.4 Waste Minimization

The MBPP is engaged in efforts to reduce the volume and toxicity of waste generated by power plant operations. Practicable waste minimization methods that have been or are being employed or investigated at MBPP include:

- Replacement of insulation that contains asbestos with a non-asbestos-based insulation material.
- Recycling of waste oil, oily water, used oil filters, solvents, mercury wastes, fluorescent tubes and light ballasts.
- Replacement of major mercury instruments (e.g., differential pressure gauges across main condensers, and flow meters for steam, boiler feed water and condensate) with electronic units, especially those associated with the water system.

- Replacement of a 1-ton chlorine tank system with a system that uses a less hazardous substance (liquid sodium hypochlorite).
- Selected material available in surplus quantities, such as latex paint, are provided to other plants or sold to employees instead of being disposed as hazardous waste.
- Designated new Makeup Water System to include "leased" demineralizer to replace the onsite demineralizer which required acid and caustic onsite and treatment of regeneration wastewater.
- Installation of an evaporator system for boiler water make-up that eliminated the use of acids and caustics. The acid and caustic tanks were sold for salvage.
- As conditions permitted, ethylene diamine tetraacetic acid (EDTA) has replaced acid/ammonia as the waterside cleaning agent for boilers. After cleaning the boiler, the EDTA solution has been transported for use in the sulfur abatement systems at other power plants. This process reduced the amount of hazardous waste generated at MBPP.
- Revision of Maintenance Procedures to "capture" product when working on systems containing hazardous material and then using the product in the system (e.g., hypochlorite, hydrazine).
- Substitution of molybdate (nonhazardous) for chromate (hazardous) in Bearing Cooling Water treatment.

Because MBPP discontinued fuel oil burning in 1995, waste generated from surface impoundments in 1998 contained a lower concentration of metals and, therefore, was less toxic than waste generated in previous years. This is due to a reduction in metals being introduced to the impoundments during boiler fireside and stack washing maintenance activities.

Waste vegetation from landscape maintenance is not associated with electric power generation, but its disposal is reduced by shredding some of it and spreading it as mulch.

6.14.2 IMPACTS

Significance criteria are based on California Environmental Quality Act (CEQA) Guidelines, Appendix G, Environmental Checklist Form (Approved January 1, 1999) and performance standards or thresholds adopted by responsible agencies. A significant impact may result if:

- Construction, demolition or operations result in waste materials being introduced into the environment in violation of federal, state or local waste management and disposal regulations.
- Construction, demolition or operations result in the generation of waste materials in excess of the receiving capacity of applicable disposal facilities.

Potential impacts are discussed in the following sections as they may relate to construction and demolition activities, operations, and maintenance. Specific waste information is provided for each of the following aspects of the Project:

- Demolition of onsite tanks
- Construction of new facilities
- Demolition of existing facilities
- Operation of new plant

Because the Project will occur within an existing facility that has been in continuous operation for more than 40 years, potential impacts discussed in this section are minimal.

6.14.2.1 Construction and Demolition Impacts

Construction of the Project and demolition of onsite tanks, power building, stacks and other existing facilities will generate both hazardous and nonhazardous wastes. A summary of construction and demolition waste streams is provided in Table 6.14-5. Waste generation and management for each demolition and construction program is discussed separately.

Project construction areas will include the footprint of the new generating units, equipment laydown sites, and alignments of the connections to the existing cooling water intake and return lines. Areas proposed for project construction lie further than 200 feet away from remedial areas, (see Figure 6.14-2), thereby assuring no conflict with potential remediation activities. Although current operation of the MBPP does not require remediation of soil or ground water, site preparation activities for the onsite fuel tank demolition will precede construction of the combined-cycle units, including any needed remediation by PG&E of localized soil and ground water impacts associated with those tanks.

6.14.2.1.1 Demolition of Onsite Fuel Oil Tanks

The following wastes will be generated during the 3-month period of this demolition:

- Steel from tanks, piping, pump and other hardware
- Asbestos-containing insulation from around the piping and other components
- Fuel oil and sludge from the bottom of fuel oil Tanks 1 through 5
- Displacement oil and oily water from Displacement Oil Tank No. 1

The quantities of these wastes are listed in Table 6.14-5. The steel will be salvaged by the demolition contractor and reused offsite. Asbestos insulation will be separated into its friable and nonfriable portions, conservatively estimated as 25 and 75 percent of the total, respectively. Both types will be disposed at a Class I or Class II landfill, approved to accept asbestos waste

TABLE 6.14-5

CONSTRUCTION AND DEMOLITION WASTES AND MANAGEMENT MORRO BAY POWER PLANT

WASTE STREAM SOURCE	WASTE STREAM CLASSIFICATION	EXAMPLE COMPOSITION	ESTIMATED AMOUNT	ESTIMATED FREQUENCY OF GENERATION	WASTE MANAGEMENT METHOD	
					Onsite	Offsite
Construction of New CTGs	HRSG Cleaning Waste Nonhazardous or Hazardous	Chelant Type Solution, Mild Citric Acid, Tri-sodium Phosphate, EDTA(1) or Ammonium Bifluoride	300,000-700,000 gallons	Once Before Initial Startup	Sample. Store hazardous portion <90 days.	Discharge Nonhazardous Solution to Municipal Sewage Treatment Plant. Dispose Other Waste at Hazardous Waste Disposal Facility
	Hazardous Solids	Empty Hazardous Material Containers	1 cy/wk	Variable	Store for <90 days	Class I Landfill Disposal
		Spent Lead Acid/ Alkaline Heavy Duty Batteries	2 tons	Variable	Store for 1 year	Transported to Recycling Facility
	Hazardous Liquids	Solvents, Used Oils, Paint, Adhesives, Oily Rags	165 gallons	Every 90 days	Store for <90 days	Recycle or Class I Landfill Disposal
	Nonhazardous Solids	Scrap wood, steel, glass, plastic, paper	40 cy/wk	Variable	Containerize/ Housekeeping	Class III/II Landfill Disposal
	Nonhazardous Liquids	Construction Area Stormwater (i.e., Surface Run-off of Water, Inert Materials, Dirt, Concrete Particles.)	500,000 gpd(3)	Variable	NPDES Stormwater Program	Discharge to Ocean Through Oil/Water Separator
		Sanitary Waste from Portable Chemical Toilets.	400 gpd	Daily	Periodically Pumped to Tanker Truck by Licensed Contractors	Discharge to Sanitary Sewer and Municipal Sewage Treatment Plant

(1) EDTA = ethylenediaminetetraacetic acid.
(2) Universal waste type can be stored for up to 1 year by a small quantity handler.
(3) The indicated volumetric rate is based on a 1-inch rain storm event over the entire Site.

TABLE 6.14-5

CONSTRUCTION AND DEMOLITION WASTES AND MANAGEMENT MORRO BAY POWER PLANT (Continued)

WASTE STREAM SOURCE	WASTE STREAM CLASSIFICATION	EXAMPLE COMPOSITION	ESTIMATED AMOUNT	ESTIMATED FREQUENCY OF GENERATION	WASTE MANAGEMENT METHOD	
					Onsite	Offsite
Demolition of Onsite Fuel-Oil Tanks[4,5]	Hazardous Solids	Friable asbestos containing debris	20 tons	Once	Store for <90 days	Disposal at Class I or II Landfill[6]
	Nonhazardous Solids	Nonfriable asbestos	70 tons	Once	Store for <180 days	Disposal at Class I or II Landfill[6]
		Steel	600 tons	Once	Store	Salvaged
		Fuel Oil Sludge (heal)	460,000 gallons (1,800 tons)[7]	Once	Store	Reused into Road Base
	Nonhazardous Liquids	Oily Water	500,000 gallons (~ 2,000 tons)	Once	Store in Baker Tank	Tank truck to offsite processor, and final discharge to POTW[8]
Demolition of Existing Facilities[5,9]	Hazardous Solids	Friable Asbestos, Lead	3,200 tons	800 tpy	Store for <90 days	Disposal at Class I or II Landfill[6]
	Nonhazardous Solids	Nonfriable Asbestos	9,600 tons	2,400 tpy	Store for <180 days	Disposal at Class I or II Landfill[6]
		Turbine Generators	8,024 tons	2,006 tpy	Store	Salvage
		Steel (Structural, Boilers, Piping)	40,064 tons	10,016 tpy	Store	Reused
		Flooring, Valves, Insulation	9,100 tons	2,275 tpy	Store	Dispose at Class III Landfill
		Concrete, Slab, Stacks	32,000 cy (64,000 tons)	8,000 cy/yr (16,000 tpy)	Reused	Not applicable

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(4) Demolition period = 3 months.
(5) Approximately 83 percent of total demolition mass will be recycled/reused/salvaged, which exceeds AB939 goal of 50 percent recycling by Year 2000.
(6) Kettleman Hills Facility (Class I) and Forward Landfill (Class II) are approved to accept both types of asbestos.
(7) Fuel oil sludge heal density assumed to be 7.88 lbs/gal, approximately the same as residual oil, according to USEPA (1985).
(8) POTW = Publicly-Owned Treatment Works.
(9) Demolition period = 4 years.

(e.g., Kettleman Hills Facility and Forward Landfill). The oil and sludge will be shipped offsite and sold as combustible oil or recycled into road mix. Oily water will be shipped offsite for treatment to a quality that is acceptable for discharge to a Publicly-Owned Treatment Works (POTW).

6.14.2.1.2 Construction of the Project

During Project construction, commercially-available chemicals (e.g., paints, paint thinner, primer) and materials will be used and stored in the construction area. Hence, small quantities of unused or spent chemicals (e.g., used paint, used motor fluids) will be generated. Proper disposal of these small quantities would be the responsibility of the individual contractors. As part of its contract specifications for construction contractors, MBPP will require that materials be handled and disposed in accordance with applicable LORS. The most likely disposal facility would be Cold Canyon Landfill because it is closest.

The types of hazardous waste generated by Project construction will be similar to those generated by normal industrial construction projects, and the amounts will not be enough to cause a significant impact on existing hazardous waste landfill capacities. Based on existing disposal rates and capacities of facilities addressed in Section 6.14.1.3, the 1 cubic yard per week of hazardous solid waste generated by Project construction would not have a significant impact on existing Class I waste disposal capacities.

Project construction activities will also result in generation of inert solid wastes, including lumber, excess concrete, metal and glass scrap, and empty nonhazardous containers. Management of these wastes will be the responsibility of the construction and demolition contractors. Typical management practices include recycling, proper temporary storage of waste and debris, and housekeeping of work areas. Pickup and disposal of wastes at a local Class III landfill will occur frequently enough to prevent unnecessary accumulation of waste onsite.

The types of solid waste to be generated by Project construction will be similar to those generated by normal industrial construction projects, and the amounts will not be enough to cause a significant impact on local landfill capacities. The 40 cubic yards per week of nonhazardous solid (i.e., approximately 3 tpd) waste generated by Project construction over its 21-month period would amount to less daily disposal rates and remaining 1.5 to 3.3 million cubic yard capacity of facilities addressed in Section 6.14.1, and hence, not have a significant impact on existing waste disposal capacities.

6.14.2.1.3 Demolition of Existing Facilities

Waste will be generated by demolition of existing facilities (e.g., stacks and power building for Units 1 through 4). Depending on the results of sampling and analyses of exhaust stack and building materials (e.g., lead, steel, asbestos, gunite), some of these waste materials (see Figure 6.14-2 and Table 6.14-5) will be managed as a hazardous waste.

A discussion of, and schedule for, demolition activities is in Section 2.3.

Reuse will greatly reduce the potential amount of waste generated by the demolition of existing facilities. For example, the 32,000 cubic yards (cy) of concrete, asphalt and soil generated by the demolition of these facilities will be used to fill in most of the 47,000 cy volume in the basement of the existing power building.

The generators and other equipment with resale value will be removed early in the demolition. Early removal will assure the equipment is not damaged by other demolition activities and will generate revenue sooner. Metal removed during demolition will be recycled to scrap dealers, most likely located in major cities such as Los Angeles and San Francisco.

Although the volume of waste generated by demolition of existing facilities is appreciable, the relatively long period of 4 years will assure that the rate of waste generation and disposal will not cause a significant impact on the capacity or allowable disposal rate of landfills used by the MBPP.

6.14.2.2 Operation and Maintenance-Related Impacts

Shutting down existing Units 1 through 4 will decrease waste generation, while start-up and operation of the new combined-cycle units will increase waste generation as shown in Table 6.14-6. Because the new units will operate more efficiently than Units 1 through 4, a tabulation of comparable waste streams for the new units versus Units 1 through 4 (see Table 6.14-6) indicates that the net generation of most waste will decrease, and hence, the environmental impacts of waste generation will be less than significant.

6.14.2.3 Cumulative Impacts

Waste management issues will continue to be simplified and reduced in magnitude because fuel oil is no longer shipped to the MBPP, transferred to storage tanks, nor used in the generation of electricity. The Duke Energy offsite storage tanks and the oil material remaining in them will be removed, along with residues in surrounding soil. The tank steel will be recycled by selling it as scrap.

TABLE 6.14-6

CHANGES IN WASTE GENERATION
MORRO BAY POWER PLANT MODERNIZATION PROJECT

BEFORE PROJECT (UNITS 1 through 4)	AFTER PROJECT (NEW CTG UNITS)
Existing Units 1-2 and 3-4 • Conventional 1,800 and 2,400 psig(1) power boilers, respectively. • Rated at 2 x 170 MW and 2 x 345 MW, respectively. • Constructed 1950s and 1960s, respectively. • Combusts natural gas since 1995, before which fuel oil also used.	**Combined-Cycle Units** • Four new combustion turbine generators, natural gas fuel only. • Two new steam turbine generators(total new capacity about 1,200 MW net). • Modify existing Units 1-4 once-through cooling circuit of ocean water to serve the new combined-cycle plant. • Expected capacity factor = approximately 90 percent.
Cooling Water Usage at Full Load(2) • Potential cooling water flow = 668 MGD (464,000 gpm)	**Cooling Water Use** • Expected cooling water flow = 475 MGD (330,000 gpm).
Chemical Usage at Full Load (lbs/day)(3) • Hydrazine: 12 • Disodium phosphate: 5 • Sodium hydroxide: 2 • Sodium hypochlorite: 160 **TOTAL: 179**	**Chemical Use at Full Load (lbs/day)** • O_2 scavenger, hydrazine derivative: 40 • Phosphate chemical: 11 • Neutralizing chemical (amine or NaOH): 4 • Sodium hypochlorite: 130 • Ammonia for SCR (29.4% aqueous solution): 13,886 **TOTAL: 14,070**
Estimated Wastes (tons/year) • Boiler bottom ash: 38(4) • Oily water: 390(4) • Boiler cleaning wastes: 3,800(5) **TOTAL: 4,228**	**Estimated Waste (tons/year)** • Boiler bottom ash: 0(6) • Oily water: 25 • CTG washwater: 85(7) • HRSG washwater: 420(8) • Spent SCR catalyst 100(9) **TOTAL: 630**

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(1) psig = pounds per square inch gauge pressure.
(2) Permit limit = 725 million gpd (see Section 6.5).
(3) Estimated from plant purchasing records for recent years, adjusted for full load operation of Units 1 through 4.
(4) Based on average quantity reported to U.S. EPA for 1995-1999, adjusted for full load operation of Units 1 through 4.
(5) Based on actual quantities for surface water impoundment discharge reported in the 1999 NPDES discharge monitoring report, assuming 50 percent of discharge is stormwater and 50 percent is cleaning wastes.
(6) Boiler bottom ash will not be generated in the new combined cycle plant.
(7) Based on approximately 20,000 gallons of wastewater per year.
(8) Based on approximately 500,000 gallons of wastewater every 5 years.
(9) Approximately 29,000 cubic feet of spent SCR catalyst will be returned to supplier every 6 years. Bulk density estimated as specific gravity of 0.64, based on 1,700 lbs of catalyst in a volume of 1.2 cubic meters (= 40 lb/ft^3) (Hitachi, 2000).

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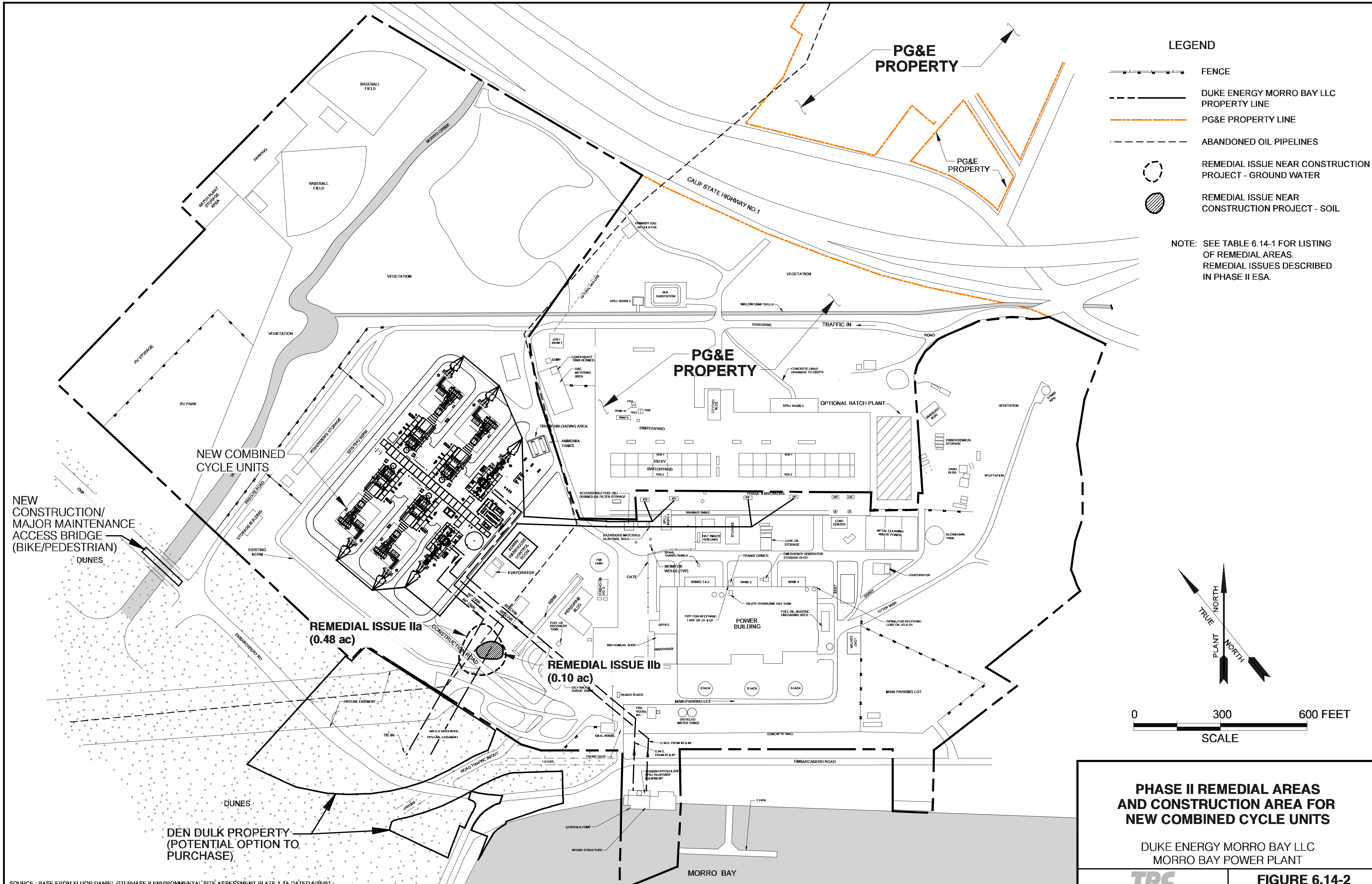

PHASE II REMEDIAL AREAS AND CONSTRUCTION AREA FOR NEW COMBINED CYCLE UNITS

DUKE ENERGY MORRO BAY LLC
MORRO BAY POWER PLANT

TRC

FIGURE 6.14-2

The onsite demolition of fuel oil tanks will occur as the first activity in construction of the Project. In contrast, demolition of the offsite tank farm would be a separately permitted cumulative project for which San Luis Obispo County is the lead agency.

Other projects are expected to be constructed, and then operate during the same periods of time as the construction and subsequent operation of the Project. These projects are listed in Table 6.1-1, including the offsite tank demolition. Other offsite projects consist of various construction projects, including homes and commercial businesses. Such projects are always in progress; hence, their waste streams, which are mostly solid and nonhazardous, already make up part of the landfill disposal rates shown in Table 6.14-4. The transport of nonhazardous solid waste to local landfills during construction of the Project which might amount to one truck trip per day, would not cause a significant traffic impact.

The offsite projects (see Table 6.1-1) will generate various liquid and solid, hazardous and nonhazardous wastes. The combined waste generation rates would be greater than the generation rates for the Project alone, but the potential cumulative total still remains small compared to the permitted disposal capacities at the hazardous and nonhazardous landfills discussed in Section 6.14.1. As discussed in Section 6.14.2.1.2, the rate of generation of nonhazardous solid waste by construction of the Project would amount to less than 4 percent of the smallest daily disposal rate at one of the local Class III landfills, and these disposal rates are no more than 53 percent of permitted rates. Therefore, the cumulative impact of waste management from the Project plus offsite projects will not be significant.

6.14.2.4 Project Design Features

The following are design and/or operational features that avoid potentially significant environmental impacts that have been incorporated into the Project:

- Construction
  - Hazardous wastes generated during demolition of existing facilities and construction of the Project will be managed by the demolition and construction contractors according to applicable regulatory requirements (e.g., Resource Conservation and Recovery Act [RCRA] regulations and the California Hazardous Waste Control Law) and construction contract specification provisions designed to assure such compliance. This management of hazardous waste may, as necessary, include storage in designated satellite accumulation areas maintained by the construction contractor.

- Nonhazardous waste, generated by both demolition of existing facilities and construction of the Project, also will be the responsibility of the demolition and construction contractors, as required by contract provisions. Management of these wastes will include proper storage and handling, recycling and general good housekeeping practices.
- Construction waste will be picked up and disposed daily to avoid unnecessary accumulation of waste onsite.

• Operation and Maintenance
- The Project will decrease the quantities of hazardous and nonhazardous waste by approximately 85 percent (see bottom of Table 6.14-6) because of the design of the new combined-cycle units and the shutdown of Units 1 through 4.
- Nonhazardous waste from the Project will be picked up according to the existing schedule.

6.14.3 MITIGATION MEASURES

Based on the above analysis of impacts and the design and operational features incorporated into the MBPP Project, no mitigation measures will be required, and hence, no monitoring of the effectiveness of mitigation will be required.

6.14.4 SIGNIFICANT UNAVOIDABLE ADVERSE IMPACTS

No significant unavoidable adverse impacts are anticipated at MBPP due to Project construction and demolition or Project operation and maintenance.

6.14.5 LORS COMPLIANCE

A summary of applicable LORS pertaining to waste management practices is provided in Section 7.5.14. As an active operating power plant, the MBPP will continue to maintain strict compliance with all LORS applicable to treatment, storage and disposal of hazardous and nonhazardous wastes. These practices will be continued as part of the Project, assuring ongoing compliance with the LORS summarized in Table 7-1. Table 6.14-7 summarizes how the Project will comply with regulations applicable to waste management.

6.14.6 REFERENCES

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TABLE 6.14-7

SUMMARY OF LORS AND COMPLIANCE APPLICABLE TO WASTE MANAGEMENT MORRO BAY POWER PLANT MODERNIZATION PROJECT

JURISDICTION	LORS/AUTHORITY	ADMINISTERING AGENCY	REQUIREMENTS/ COMPLIANCE	APPROACH TO COMPLIANCE
Federal	RCRA; 42 USC §6901 et seq.; 40 CFR Parts 260-272.	EPA Region IX; Cal-EPA, Department of Toxic Substances Control (DTSC).	Management of hazardous wastes.	When hazardous waste is generated, special forms will be used to track it and maintain a Chain-of-Custody through its final disposal at a licensed hazardous waste (Class I) landfill.
	CERCLA ("Superfund"), 42 USC §9601 et seq.; 40 CFR Part 302, as amended by SARA; 40 CFR Part 302, (SARA Title III); 42 USC §11001 et seq.; 40 CFR Parts 350, 355, 370.	EPA Region IX; San Luis Obispo County Environmental Health Department.	CERCLA - Release notification requirements; SARA Title III - reporting requirements for storage, handling, or production of significant quantities of hazardous or acutely hazardous waste.	The MBPP will continue to keep records and prepare reports on reportable releases and emissions to land, water, and the atmosphere.
	49 CFR, Parts 172, 173, 179.	Department of Transportation; California Highway Patrol.	Meet standards for labels, placards, and markings on hazardous waste shipments.	Hazardous waste containers and shipping vehicles will continue to be labeled according to regulations.
State	California Porter-Cologne Water Quality Control Act; California Water Code §13260-13269; 23 CCR §2510 Article 9 et seq.	SWRCB; Central Coast RWQCB.	Waste discharge requirements - address storage or disposal of liquid wastes.	Wastewater generation and discharges will continue to be recorded and reported.
	Hazardous Waste Control Act of 1972, as amended; California Health & Safety Code §25100 et seq.; 22 CCR 66001 et seq.	Cal EPA (DTSC); San Luis Obispo County Environmental Health Department; Morro Bay Fire Department.	Meet requirements for management of hazardous wastes.	Existing hazardous waste contamination of soil is being managed by PG&E. Future hazardous waste minimization, record keeping, and reporting will continue current practices.
Local	City of Morro Bay Zoning Ordinance. Section 17.52.090.	Central Coast RWQCB.	Comply with standards that regulate discharge of harmful liquid or solid waste.	Wastes from MBPP will be discharged according to standards (e.g., NPDES permit).

98-710/Rpts/AFC(text)/Tbls&Figs (10/13/00/kh)

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